



**(43) International Publication Date**  
**18 August 2005 (18.08.2005)**

**PCT**

**(10) International Publication Number**  
**WO 2005/076458 A1**

**(51) International Patent Classification<sup>7</sup>: H02P 6/18**

**CARDOLETTI, Laurent** [CH/CH]; Chemin du Levant D, CH-1847 Rennaz (CH). **FLEURY, Christian** [CH/CH]; En Blanchet, CH-1585 Cottetrd (CH). **KOECHLI, Christian** [CH/CH]; Vy d'Etra 71, CH-2000 Neuchâtel (CH).

**(21) International Application Number:** PCT/CH2005/000064

**(22) International Filing Date:** 4 February 2005 (04.02.2005)

(74) **Agent:** G L N; Gresset & Laesser Neuchâtel, Puits-Godet  
8A, CH-2000 Neuchâtel (CH).

(25) **Filing Language:** English

**(81) Designated States** (*unless otherwise indicated, for every kind of national protection available*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(26) **Publication Language:** English

**(30) Priority Data:**  
60/542,349                      6 February 2004 (06.02.2004)      US

(71) **Applicant** (for all designated States except US): **MI-CRO-BEAM SA** [CH/CH]; Rue de la Côte 109, CH-2000 Neuchâtel (CH).

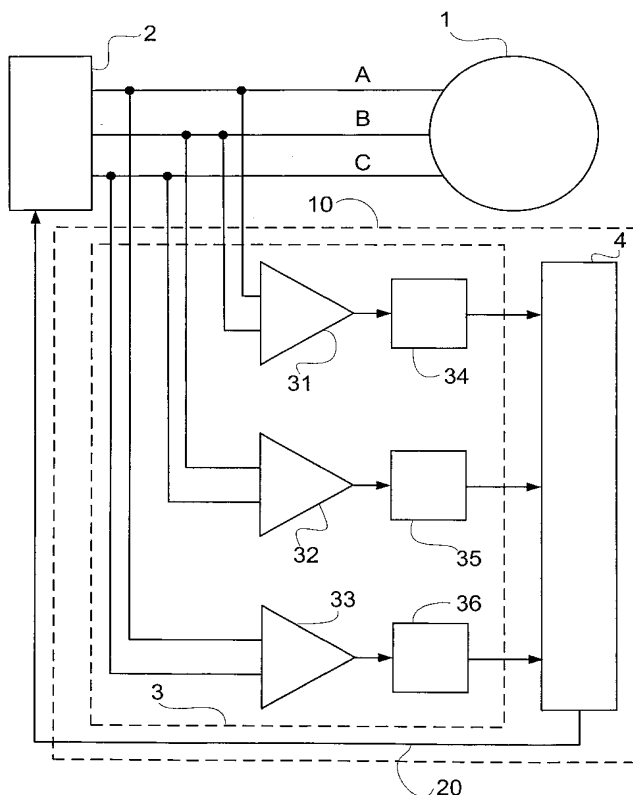
**(72) Inventors; and**

**(84) Designated States** (*unless otherwise indicated, for every kind of regional protection available*): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM,

**(75) Inventors/Applicants (for US only): BIELER, Thierry**  
[CH/CH]; L'Oche l'Abbe 2, CH-1112 Echichens (CH).

[Continued on next page]

**(54) Title:** METHOD AND DEVICE FOR CONTROLLING A SYNCHRONOUS MOTOR WITH PERMANENT MAGNETS



**(57) Abstract:** The electronic device (10) for controlling a motor (1), the three phases (A, B, C) of which are driven by a motor driver (2), comprises detection means (3) and a control circuit (4). The detection means comprise three high-gain differential amplifiers (31, 32, 33) and three A/D converters (34, 35, 36). The detection means detect back EMF voltages induced by the motor rotation and apply corresponding signals to the control circuit. The control circuit computes the position and/or the speed of the motor and then delivers filtered values from said computed rotor position and/or speed to control the motor driver. The motor may thus be controlled even at near-zero rotational speed.



ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

**Published:**

— *with international search report*

— *before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments*

*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*